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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,311	09/30/2003	Frank G. Gates	42P16521	8182

8791 7590 11/20/2006

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EXAMINER

RAMPURIA, SATISH

ART UNIT PAPER NUMBER

2191

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/676,311

Applicant(s)

GATES ET AL.

Examiner

Satish S. Rampuria

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the application filed on September 30, 2003.
2. Claims 1-53 are pending.

Oath/Declaration

3. The Office acknowledges receipt of a properly signed oath/declaration filed February 9, 2004.

Specification

4. The use of the trademark "Java" has been noted in this application (i.e., page 8). It should be appropriate or proper term (i.e., Java™) (see MPEP 608.01(v)) used, wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Drawings

5. The drawings were received on September 30, 2003. These drawings are acceptable by the examiner.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

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Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7. Claims 32-40 and 41-49 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 32 is non-statutory because the language of the claim raises a question as to whether the claim is directed merely to an abstract idea which would result in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U.S.C. 101. Claim recites an apparatus of transforming source code into intermediate code, representing functional descriptive material without a processor/memory, software per se are not tangibly embodied. Claims 33-40 are directly or indirectly dependent on claim 32 and further support of transforming source code into intermediate code without processor/memory, software per se are not tangibly embodied thus amounts to only abstract idea and are nonstatutory.

Claim 41-49 is non-statutory because specification defines "computer readable medium" as including intangible media such as transmission media, digital or analog communication links, network and/or wired or wireless communication links, radio frequency and light wave transmissions (Applicant's specification, page 7 [0014]). Claim 41-49 thus amounts to only abstract idea and are nonstatutory.

To overcome this type of 101 rejection the claims need to be amended to include only the physical computer media and not a transmission media or other intangible or non-functional media. For the specification at the bottom, carrier medium and transmission media would be not statutory but storage media would be statutory.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-22, 24-26, 32-46 and 50-53 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent No. 6,289,505 to Goebel (hereinafter, Goebel).

Per claim 1:

Goebel discloses:

- A method comprising:
- receiving code (See FIG. 3, element 301 and related discussion);
- executing the code (See FIG. 3, element 303 and related discussion);
- generating data that indicates performance of the executed code (See FIG. 3, element 307 and related discussion); and
- causing the executed code to be modified based, at least in part, on the data (See FIG. 3, elements 305-309 and related discussion).

Per claim 2:

The rejection of claim 1 is incorporated and further, Goebel discloses:

- wherein the code comprises intermediate code (See FIG. 3, element 305 and related discussion).

Per claim 3:

The rejection of claim 2 is incorporated and further, Goebel discloses:

- wherein executing the code comprises simulating execution of the intermediate code (See FIG. 4, element 409 and related discussion).

Per claim 4:

The rejection of claim 2 is incorporated and further, Goebel discloses:

- wherein generating the data regarding the performance of the executed code comprises generating a performance profile (See FIG. 4, element 407 and related discussion).

Per claim 5:

The rejection of claim 4 is incorporated and further, Goebel discloses:

- wherein causing the executed code to be modified based, at least in part, on the data comprises annotating the intermediate code based, at least in part, on performance profile data (col. 6, lines 45-67 “process profile information... generated during execution...” and col. 7, lines 3-52 “...processes...annotation information... was generated during the compilation... ”).

Per claim 6:

The rejection of claim 5 is incorporated and further, Goebel discloses:

- wherein annotating the intermediate code comprises concatenating data structures that include the performance profile data to intermediate code to embed the performance

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profile data into the intermediate code (See FIG. 3, elements 315, 317 and related discussion).

Per claim 7:

The rejection of claim 5 is incorporated and further, Goebel discloses:

- wherein annotating the intermediate code comprises: generating a file that includes the performance profile data; and mapping the performance profile data to corresponding portions of intermediate code (col. 6, lines 45-67 “process profile information... generated during execution...” and col. 7, lines 3-52 “...processes...annotation information... was generated during the compilation...”).

Per claim 8:

The rejection of claim 5 is incorporated and further, Goebel discloses:

- providing the annotated intermediate code to a compiler, wherein the compiler transforms the annotated intermediate code into machine code (col. 6, lines 45-67 “process profile information... generated during execution...” and col. 7, lines 3-52 “...processes...annotation information... was generated during the compilation...”).

Per claim 9:

The rejection of claim 5 is incorporated and further, Goebel discloses:

- wherein the performance profile data comprises one or more of branch statistics, loop statistics and function invocation statistics (col. 7, lines 3-52 “...optimization

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include...techniques for interprocedural optimization and local, loop, and global scheduling...”).

Per claim 10:

The rejection of claim 8 is incorporated and further, Goebel discloses:

- wherein the machine code executes faster than the intermediate code (See FIG. 3, elements 315, 317 and related discussion).

Per claim 11:

The rejection of claim 11 is incorporated and further, Goebel discloses:

- wherein the code comprises machine code (See FIG. 4 and related discussion).

Per claim 12:

The rejection of claim 11 is incorporated and further, Goebel discloses:

- wherein the executing the code comprises simulating execution of the machine code (See FIG. 4 and related discussion).

Per claim 13:

The rejection of claim 11 is incorporated and further, Goebel discloses:

- wherein generating the data regarding the performance of the executed code comprises generating a data file (col. 6, lines 45-67 “process profile information... generated during execution...” and col. 7, lines 3-52 “...processes...annotation information... was

generated during the compilation... ”).

Per claim 14:

The rejection of claim 13 is incorporated and further, Goebel discloses:

- wherein causing the executed code to be modified based, at least in part, on the data comprises providing the data file to a compiler, wherein the compiler transforms the source code into modified machine code based, at least in part, on the data file (col. 6, lines 45-67 “process profile information... generated during execution...” and col. 7, lines 3-52 “...processes...annotation information... was generated during the compilation... ”).

Per claim 15:

The rejection of claim 14 is incorporated and further, Goebel discloses:

- wherein the data comprises one or more of branch statistics, loop statistics and function invocation statistics (col. 7, lines 3-52 “...optimization include...techniques for interprocedural optimization and local, loop, and global scheduling...”).

Per claim 16:

The rejection of claim 1 is incorporated and further, Goebel discloses:

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- receiving external execution input (See FIG. 3, element 313 and related discussion); and
- using the external execution input to execute the code (See FIG. 3, element 305 and related discussion).

Per claim 17:

The rejection of claim 1 is incorporated and further, Goebel discloses:

- wherein the data comprises one or more of plain-text format, binary representations, database maps, and character delimited proprietary format (col. 8 to col. 9, lines 65-67 and 1-3 "...save data set specific binary executable...optimized binary executable on the data set to achieve the optimized performance with respect to that data set...").

Per claims 18 and 20:

Goebel discloses:

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- A method comprising: transforming source code into intermediate code.(See FIG. 3, element 315 and related discussion);
- providing the intermediate code to a profiler (See FIG. 4, element 407 and related discussion);
- receiving from the profiler annotated intermediate code (See FIG. 3, element 305 and related discussion); and
- transforming the annotated intermediate code into machine code (See FIG. 4, element 411 and related discussion).

Per claim 19:

The rejection of claim 18 is incorporated and further, Goebel discloses:

- wherein the annotated intermediate code is annotated to include one or more of branch statistics, loop statistics and function invocation statistics (col. 7, lines 3-52
“...optimization include...techniques for interprocedural optimization and local, loop, and global scheduling...”).

Per claim 21:

Goebel discloses:

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- A method comprising:
- transforming source code into machine code (See FIG. 1 and related discussion);
- receiving a data file generated by a profiler (See FIG. 3 element 317 and related discussion), wherein the data file indicates a performance of the machine code as executed by the profiler (See FIG. 3, element 307 and related discussion); and
- transforming the source code into modified machine code based, at least in part, on the data file (See FIG. 3, elements 305-309 and related discussion).

Per claim 22:

The rejection of claim 21 is incorporated and further, Goebel discloses:

- providing the machine code to the profiler (See FIG. 4 and related discussion).

Per claim 25:

The rejection of claim 21 is incorporated and further, Goebel discloses:

- wherein the data file includes one or more of branch statistics, loop statistics and function invocation statistics (col. 7, lines 3-52 "...optimization include...techniques for interprocedural optimization and local, loop, and global scheduling...").

Per claim 26:

The rejection of claim 21 is incorporated and further, Goebel discloses:

- wherein the data file includes an identifier that associates an executed instruction with generated data (col. 8 to col. 9, lines 65-67 and 1-3 "...save data set specific binary

executable...optimized binary executable on the data set to achieve the optimized performance with respect to that data set...”).

Claims 32-34 are the apparatus claim corresponding to method claims 1, 19-20 respectively, and rejected under the same rationale set forth in connection with the rejection of claims 1, 19-20 respectively, above.

Claims 35-40 are the apparatus claim corresponding to method claims 1, 16, 5, 19, 20 and 24 respectively, and rejected under the same rationale set forth in connection with the rejection of claims 1, 16, 5, 19, 20 and 24 respectively, above.

Claims 41-46 are the article of manufacture claim corresponding to method claims 1, 2, 5, 14, 8 and 21 respectively, and rejected under the same rationale set forth in connection with the rejection of claims 1, 2, 5, 14, 8 and 21 respectively, above.

Claims 50-53 are the system claim corresponding to method claims 1, 2 and 16 respectively, and rejected under the same rationale set forth in connection with the rejection of claims 1, 2 and 16 respectively, above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

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subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 23 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel in view of Applicant's Admitted Prior Art (hereinafter, AAPA).

Per claim 23:

The rejection of claim 22 is incorporated and further, Goebel does not explicitly disclose wherein providing the machine code to the profiler comprises providing the machine code to a virtual machine.

However, AAPA discloses in an analogous computer system wherein providing the machine code to the profiler comprises providing the machine code to a virtual machine (Applicant's Specification [0027] "Virtual machine are known in the art, and thus will not be described further...").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of wherein providing the machine code to the profiler comprises providing the machine code to a virtual machine as taught by AAPA into the method of generating the optimized executable code as taught by Goebel. The modification would be obvious because to of one of ordinary skill in the art providing the machine code to the profiler comprises providing the machine code to a virtual machine would be known as suggested by AAPA (page 11 [0027]).

Per claim 24:

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The rejection of claim 22 is incorporated and further, Goebel does not explicitly disclose wherein providing the machine code to the profiler comprises providing the machine code to a probed processor.

However, AAPA discloses in an analogous computer system wherein providing the machine code to the profiler comprises providing the machine code to a probed processor (Applicant's Specification [0028] "Probed hardware is known in the art, and thus will not be described further...").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of wherein providing the machine code to the profiler comprises providing the machine code to a probed processor as taught by AAPA into the method of generating the optimized executable code as taught by Goebel. The modification would be obvious because to one of ordinary skill in the art providing the machine code to the profiler comprises providing the machine code to a probed processor would be known as suggested by AAPA (page 12 [0028]).

12. Claims 27-31 and 47-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goebel in view of US Patent No. 6,874,410 to Shupak (hereinafter, Shupak).

Per claim 27:

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The rejection of claim 21 is incorporated and further, Goebel does not explicitly disclose determining whether to modify the modified machine code; and providing the modified machine code to the profiler, if the modified machine code is to be further modified.

However, Shupak discloses in an analogous computer system determining whether to modify the modified machine code; and providing the modified machine code to the profiler, if the modified machine code is to be further modified (See FIG. 7 and related discussion).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the method of determining whether to modify the modified machine code; and providing the modified machine code to the profiler, if the modified machine code is to be further modified as taught by Shupak into the method of generating the optimized executable code as taught by Goebel. The modification would be obvious because of one of ordinary skill in the art would be motivated modify the modified code if it is need to be modified to avoid the overhead execution time as suggested by Shupak (col. 3, lines 25-40).

Per claim 28:

The rejection of claim 27 is incorporated and further, Goebel does not explicitly disclose wherein determining whether to modify the modified machine code comprises determining whether a predetermined performance gain has been achieved.

However, Shupak discloses in an analogous computer system wherein determining whether to modify the modified machine code comprises determining whether a predetermined performance gain has been achieved (See FIG. 7 and related discussion).

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The feature of wherein determining whether to modify the modified machine code comprises determining whether a predetermined performance gain has been achieved would be obvious for the reasons set forth in the rejection of claim 27.

Per claim 29:

The rejection of claim 28 is incorporated and further, Goebel does not explicitly disclose wherein determining whether the predetermined performance gain has been achieved comprises determining whether the modified machine code executes faster than the machine code.

However, Shupak discloses in an analogous computer system wherein determining whether the predetermined performance gain has been achieved comprises determining whether the modified machine code executes faster than the machine code (See FIG. 7 and related discussion).

The feature of wherein determining whether the predetermined performance gain has been achieved comprises determining whether the modified machine code executes faster than the machine code would be obvious for the reasons set forth in the rejection of claim 27.

Per claim 30:

The rejection of claim 28 is incorporated and further, Goebel does not explicitly disclose wherein determining whether to modify the modified machine code comprises determining whether a cost of modifying the modified machine code exceeds a performance gain to be achieved by the modifying.

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However, Shupak discloses in an analogous computer system wherein determining whether to modify the modified machine code comprises determining whether a cost of modifying the modified machine code exceeds a performance gain to be achieved by the modifying (See FIG. 7 and related discussion).

The feature of wherein determining whether to modify the modified machine code comprises determining whether a cost of modifying the modified machine code exceeds a performance gain to be achieved by the modifying would be obvious for the reasons set forth in the rejection of claim 27.

Per claim 31:

The rejection of claim 21 is incorporated and further, Goebel does not explicitly disclose wherein receiving the data file comprises receiving the data file via one of a data storage device, an alphanumeric input device, a network interface, a shared data storage location, and a direct real-time connection.

However, Shupak discloses in an analogous computer system wherein receiving the data file comprises receiving the data file via one of a data storage device, an alphanumeric input device, a network interface, a shared data storage location, and a direct real-time connection (See FIG. 7 and related discussion).

The feature of wherein receiving the data file comprises receiving the data file via one of a data storage device, an alphanumeric input device, a network interface, a shared data storage location, and a direct real-time connection would be obvious for the reasons set forth in the rejection of claim 27.

Claims 47-49 are the article of manufacture claim corresponding to method claims 27, 27 and 31 respectively, and rejected under the same rational set forth in connection with the rejection of claims 27, 27, and 31 respectively, above.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Satish S. Rampuria** whose telephone number is **(571) 272-3732**. The examiner can normally be reached on **8:30 am to 5:00 pm** Monday to Friday except every other Friday and federal holidays. Any inquiry of a general nature or relating to the status of this application should be directed to the **TC 2100 Group receptionist: 571-272-2100**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Wei Y. Zhen** can be reached on **(571) 272-3708**. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

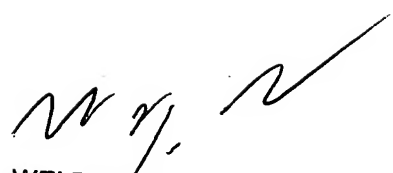
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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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10/676,311

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